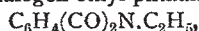


experiments performed in the same direction by M. Gayon. He incloses the apples in vapours of chloroform, ether, and carbon disulphide, and his results agree with those of the first observers. The chloroform and ether act in the same manner as the carbolic and hydrocyanic acids; the carbon disulphide in the same way as camphor, permitting partial fermentation only.

**A PROBLEM IN CHEMICAL AFFINITY.**—In his work on "Gasometric Methods," Prof. Bunsen details an interesting series of experiments on the phenomena accompanying the explosion of hydrogen and carbon monoxide with a volume of oxygen insufficient for its complete combustion. From the results he deduces the conclusion that the ratio between the products of combustion ( $H_2O : CO_2$ ) can always be expressed by *small whole numbers* (1 : 2, 1 : 3, 1 : 4, &c., and that it alters suddenly from one figure to the next by gradually increasing the amount of hydrogen. Deeming the nine experiments upon which the conclusion was based as insufficient for the establishment of a general principle, Prof. Horstmann, of Heidelberg, describes in the *Verhandlungen des heidelb. naturf. med. Vereins*, an extensive series of observations designed to test the truth of the law. Among his results the following facts are of interest. In exploding CO with gradually increasing quantities of  $H_2 + O$ , while the ratio between H and CO increased from 0.25 : 1 to 2.33 : 1, the ratio between  $H_2O$  and  $CO_2$  gradually increased from 0.8 : 1 to 4.5 : 1, with no evidence of a predilection for rational numbers. Experiments on a mixture of CO and H, with gradually increasing amounts of O, led to the same results, showing no such regularity in the division of O between the two combustible gases as Bunsen's law would indicate. When aqueous vapour is present in the mixture less H and more CO unites with O, while the presence of  $CO_2$  reverses the case. By gradually increasing the amount of O in the explosive mixture, it was noticed that the ratio between the resultant  $H_2O$  and  $CO_2$  increased until it attained a maximum, when 35 per cent. of the combustible gases were oxidised, and then sank regularly to the ratio denoting complete combustion. The oxygen appears to be divided among the two gases according to the following law:—The ratio between the resultant  $H_2O$  and  $CO_2$  is equal to the ratio between the residual H and CO multiplied by a co-efficient of affinity which is independent of the ratio between the combustible gases but dependent on the relative quantity of O present. This co-efficient of affinity varied between 4 and 6.4, showing that always more H relatively than CO is consumed, and hence that the affinity of O to H is greater than that to CO.

**HALOGEN DERIVATIVES OF AMINES.**—An attempt has frequently been made by chemists to replace the hydrogen in the hydrocarbon group present in amines, by Cl, Br, or I. These efforts have hitherto resulted simply in the substitution of the basic H atoms of the amine by halogens—as  $C_6H_5.NCl_2$ —or in complete decomposition. A. Michael (*Berl. Ber.*, x., 1644) has devised a method for accomplishing this end, which consists in first replacing these basic H atoms by acid residues, and then exposing to the action of a halogen ethyl-phthalimide,



yields in this way with Br a tribromo-ethyl-phthalimide.

**DOUBLE SALTS WITH CYANIDE OF GOLD.**—C. G. Lindbom publishes in the *Univ. Arsskrift* of Lund an exhaustive account of these compounds, which may be regarded as salts of the two acids,  $HCy.CyAu$  and  $HCy.CyAu.Cy_2 + 1\frac{1}{2}aq.$ , neither of which, however, can be obtained pure for analysis on account of their tendency to decompose. Most of the auro salts unite directly with a molecule of the halogens; for example aurocyanide of sodium,  $NaCy_2Au$ , forms bromo-aurocyanide of sodium,  $NaCy_2AuBr_2 + 2aq.$  Aurocyanide of ammonium,  $AmCy_2Au$ , is decomposed at  $100^\circ$ .

**THE FOURTH NITROBENZOIC ACID.**—Prof. F. Fittica has discovered lately a new nitro-benzoic acid, making the fourth of the isomeric acids, which has been contested by other chemists, especially as it fails altogether to harmonise with the theories at present accepted in regard to the structure of benzene derivatives. In the October session of the Deutsche chemische Gesellschaft, he strengthens his position by announcing the discovery of a fourth nitro-benzaldehyde, obtained by the action of  $H_2SO_4$  on benzaldehyde and ethylic nitrate, which on oxidation is changed into the new nitrobenzoic acid,  $C_6H_4.NO_2.COOH$ .

**INFLUENCE OF ISOMERISM ON THE FORMATION OF ETHERS BETWEEN ACIDS AND ALCOHOLS.**—In the September session of the Russian Chemical Society, Prof. H. N. Menschutkin presented an elaborate paper on this subject based on observations of the formation of acetic ethers. The process consisted in inclosing molecular weights of an alcohol and acetic acid in glass tubes, immersing it in a glycerine bath at  $154^\circ$  for a certain time, and then rapidly cooling it, and titrating the unaffected acetic acid with baryta water. The results show that in regard to the rapidity and limits of etherification, the primary alcohols are sharply divided from the secondary, and the latter from the tertiary; and the saturated alcohols from the non-saturated. A regular decrease in the rapidity coincides with an increase in the molecular weight of the alcohol. As in many other series of experiments, methylic alcohol shows considerable deviations from the laws governing its higher homologues. In the case of non-saturated alcohols the rapidity is less than that of the corresponding primary alcohols, but greater than that of the corresponding secondary alcohols.

**PHOSPHIDES OF TIN.**—Since the introduction of phosphorus bronze, the compounds of phosphorus and the metals are receiving more attention. S. Natanson and G. Vortmenn describe (*Berl. Ber.*, x. 1459), several methods of preparing phosphides of tin, viz., throwing P on molten tin, melting a mixture of vitreous phosphoric acid, charcoal, and tin, and passing phosphorus vapours over molten tin in a hydrogen stream. These processes all yield a crystalline silvery white compound, containing from  $1\frac{1}{2}$  to 3 per cent. of P, and leaving on treatment with H<sub>2</sub>O a residue of pure SnP.

**CHEMICAL ACTION OF LIGHT.**—In a late number of the *Annales de Chimie et Physique*, M. Chastaing advances, in connection with a variety of observations on this topic, the theory that the chemical action of the various coloured rays on inorganic substances is dependent on refrangibility, blue and violet acting as reducing agents, red and yellow causing oxidation. Prof. H. W. Vogel attacks this opinion vigorously in the last session of the German Chemical Society, claiming that the nature of the substance causes the action to be one of reduction or oxidation. The union of H and Cl, which takes place so rapidly in violet light, is regarded as purely analogous to oxidation, and he alludes to Timiriacheff's late experiments, showing that the reduction of  $CO_2$  by plants, proceeds more rapidly in red light than in green.

## NOTES

At the meeting of the Royal Society, on Thursday last, the *Times* states, the following were elected foreign members:—Marcellin Berthelot, of Paris; Joseph Decaisne, of Paris; Emil Dubois Reymond, of Berlin; Adolph Wilhelm Hermann Kolbe, of Leipsic; Rudolph Leuckart, of Leipsic; Simon Newcomb, of Washington; and Pafnutij Tscheybyschow, of St. Petersburg. By this election the foreign list of the society is made up to its full complement of fifty members.

MR. ALEXANDER AGASSIZ, it is understood, proposes to spend the winter in the prosecution of scientific research in the Florida

seas, and will carry a line of dredgings and trawlings from Key West to Yucatan. Bearing in mind the very great success that has been experienced by the use of steel wire in taking soundings, he proposes to try the experiment of a steel rope  $1\frac{1}{2}$  inches in diameter in the work of dredging and trawling. This, he thinks, will reduce the friction to such an extent as to greatly diminish the time and power necessary in making a cast of the dredge.

THE Emperor of Russia has conferred the order of St. Anne on Mr. Carl Bock, F.G.S.

THE *Monthly Microscopical Journal* expires with the number just issued for the last two months. It was edited from the commencement by Dr. Henry Lawson—who, after a long period of failing health, died on October 4 last—and has been in existence for nine years. Many valuable papers are contained in it, by distinguished authors, including the *Proceedings* of the Royal Microscopical Society, which will in future be published independently.

WITH reference to the brilliant meteor of December 6, we learn from Capt. Tupman that it will take him some time to determine the most probable path from the immense number of observations, good, bad, and indifferent, sent to him. Meantime he thinks that Prof. Herschel's preliminary calculation, not yet published, that it began fifty-three miles over Wigan, and burst thirty-three miles over a point half way between Great Orme's Head and Douglas in Man, with radiant  $78^\circ + 6^\circ$  ( $\gamma$  Orionis), agrees better with the observations than any other path. We hope to publish Capt. Tupman's conclusions when his calculations are completed.

THE subject of Prof. Tyndall's six Christmas lectures to juveniles is to be Heat, Visible and Invisible. They commence on Thursday week.

MM. FEIL and FREMY, at last week's meeting of the Paris Academy of Sciences, read a paper describing a new process for the manufacture of rubies and other precious stones. The sensation created by these wonderful experiments has been so general that the Association of Jewellers have written to some of the papers stating that it was impossible for human art to compete against nature, that mysterious maker having at her disposal an indefinite number of centuries, which is not the case with any human worker. M. Daubrée, the Director of the School of Mines, has expressed the wish to open, in the public museum of that magnificent establishment, a gallery for the exhibition of minerals produced artificially. M. Feil has already produced in his glass foundry, and by the same process as rubies, an immense number of stones which can be compared with the most admirable crystalline productions of nature. Some of them are so inexpensive that they may be used for ordinary decorative purposes.

AN extraordinary but happily unsuccessful attempt was recently made upon the life of Mr. Russell, the Government Astronomer at Sydney, New South Wales. On September 8 a lad of about nineteen years of age left a box at the observatory for Mr. Russell, who, under the impression that it contained instruments of some kind, proceeded to open it. He found the lid a sliding one, similar to those adapted to ordinary instrument cases, and he had not drawn it far when he discovered that the affair partook more of the character of an infernal machine than anything else. The movement of the lid became rather stiff, and upon inspecting it and the box a little more closely he discovered at one end of the latter several grains of powder. The box was then taken into the open air, where it was investigated with special care. The lid was released, and there were found in the box at least  $4\frac{1}{2}$  lbs. of blasting-powder. In it were no less than sixteen matches, stuck with their sulphurous points in dangerous proximity to a sheet of sand-paper fastened to the under-side of the

lid, the design being evidently to cause an explosion by the friction of the sand-paper against the matches; and there can be little doubt that this would have been effected had not great care been exercised in handling the affair. Besides the matches and powder, dangerous enough in themselves, a ginger-beer bottle, filled with gunpowder, and evidently intended to act as a shell, was found in the box; Mr. Russell has expressed his belief that altogether there was a sufficient quantity of explosive material present in the box not only to destroy life, but to blow the building down. One of the workmen at the observatory was arrested on suspicion.

THE first number is announced to appear on January 3 of a new weekly *Revue Internationale des Sciences*, under the editorship of Dr. De Lanessan, Professor of Natural History in the Medical Faculty of Paris. The publisher is Doin, of the Place de l'Odéon, Paris. Among the *collaborateurs* are several well-known names in France and Germany, England being represented by Mr. Francis Darwin.

THE expected change has taken place in the French Ministry, M. Faye has resumed his place as one of the Inspectors of Public Instruction, and Member of the Bureau des Longitudes. M. Bardoux, one of the most able members of the republican party, has been appointed Minister of Public Instruction. M. Bardoux is the President of the General Council of Puy de Dôme, who constructed, at the expense of the department, the observatory built on the top of the mountain of the same name.

M. BARDOUX is preparing a bill granting to the rectors of the several French academies (there is one in each of the eighty-two departments) the right to appoint the teachers in the public schools. Up to the present time these nominations were made by the prefects and too often the choice was influenced by political considerations.

THE enlarged council of the Paris Observatory held last Saturday a very interesting meeting. M. Faye has not resumed his seat as councillor. Several reclamations were read against the resolutions which had been adopted in the previous sitting. One of them was on behalf of the Bureau des Longitudes, asking to be allowed to have a voice in the presentation of the Director of the Observatory, as well as the Council and the Academy of Sciences. From the foundation of the Bureau des Longitudes up to 1854, when M. Leverrier was appointed director for life by Napoleon III., the Bureau des Longitudes had the control of the observatory. Each year the Bureau appointed one of its members to superintend the observations, and the custom was to reappoint the same member up to his death. Arago thus held his office by yearly tenure for more than a quarter of a century. The discussion of meteorological matters was begun, and the meeting adjourned till to-day. No formal proposition will be made to sever the International Bureau from the Observatory, the aim of certain members being confined to the establishment of a Central Board for Meteorology, which will give its advice on the organisation of the International Bureau, the Montsouris Central Observatory, the Puy de Dôme, the Pic du Midi, and any other establishment which may be founded for meteorological purposes.

WE are happy to state that the rumour widely spread in Paris of the death of Drouyn de Lhuys is unfounded, the learned gentleman having recovered, against almost all hopes. He will very likely resume his place in the several scientific societies which he had resigned.

M. MILNE EDWARDS has been appointed president of the French Scientific Association, which was founded by M. Leverrier thirteen years ago. Under the direction of M. Leverrier the association spent not less than 250,000 francs for scientific purposes, and has accumulated a sum of about 400,000



frances. The association is supported solely by voluntary contributions, and meets yearly at Paris. Many improvements are contemplated by the new president.

A CHIMPANZEE, about 2½ years old, has been recently placed on view at the Westminster Aquarium by Mr. Farini. It is very gentle in disposition, and is undergoing an education in the usages of civilised life at the hands of its keeper, Mr. Zack Coup. For some time it has been in one of the private houses at the Zoological Gardens, and there it caught cold. On its removal to the room at the Aquarium, where a temperature of about 70° is maintained, it improved, but the fog of yesterday (Wednesday) seemed to oppress it very much. It is suffering both in head and lungs, though it still struggles very successfully to be cheerful and entertaining. It is curious that Pongo's lungs were found all sound, though the few chimpanzees that have been exhibited in Europe have succumbed to lung disease. With the chimpanzee are also a very fine cynocephalus, a "sacred" monkey from India, and a number of monkeys less rare. There are close by a python, a boa, and two anacondas, and in order to insure that they shall not be hidden in rugs when visitors want to see them, they are at intervals exhibited by an Abyssinian girl, who goes through the ceremony of an incantation each time.

IN his introductory address at the opening meeting of the Royal Society of Edinburgh Sir Alexander Grant stated that the society was an emanation from the University of Edinburgh, from which it sprang on the suggestion of Principal Robertson in the latter part of 1782. Thus, in the same year that the University would celebrate its tercentenary the society would be able, perhaps conjointly, to celebrate its 100th birthday. In one essential particular it differed from the Royal Society of London. From the first the promotion of literature as well as science was the object of the Royal Society of Edinburgh. But it had been observed that the literary element in their proceedings had been gradually dwindling away. Sir Alexander had inquired as to the number of papers not connected with philosophical science which had been contributed during the last fifteen years, and it appeared to be considerably less than forty, or little more than two per annum. In the last fifteen years, out of about 370 ordinary Fellows of the Society, only about twenty had come forward to contribute papers other than philosophical or mathematical. The Council of the Society have awarded the Macdougall-Brisbane prize, consisting of a gold medal and 15*l.* 14*s.* 7*d.*, to Mr. Alex. Buchan, for his paper on "The Diurnal Oscillations of the Barometer." Prof. Balfour reported that the membership of the Society at present was 427, consisting of 373 ordinary and fifty-four honorary or non-resident Fellows.

ADVICES from the Howgate Arctic Expedition have been received up to the date of October 2, at which time the vessel had reached Niantitik Harbour, in Cumberland Gulf. The passage of forty-three days from New London had been very stormy, but, as far as reported, without any disaster. Mr. L. Kumlien, the naturalist of the party, had gathered some specimens, but did not find the promise of suitable collecting ground in the immediate vicinity very good. He hoped, however, to change his quarters to a better location.

WE learn from the *Ivestia* of the Russian Geographical Society, that at the beginning of September M. Prshevalsky had already started for Tibet. He is accompanied by an aid, M. Ecklon, four cossacks, and two soldiers. Having arrived at the conclusion that it will be impossible to reach Tibet by way of Lake Lob-Nor, he will try the route through Guchen and Hami, and thence to Zaidam and the upper parts of the Blue River. He expects to be at Lassa next year, about May or June, and if he succeeds, he will remain in Tibet for a year.

AFTER having penetrated last year for 160 miles up the Amu Daria, the Russian steamer *Samarkand* has penetrated this year

as far as the fortified town Chardjui. A complete survey of the river was made, and considerable botanical and zoological collections were brought back by the officers on board.

RUSSIAN newspapers announce that the *Morning Dawn* reached St. Petersburg on December 1, having left the mouth of the Yenissei on August 21. This ship, or rather boat, 56 feet long, 14 feet wide, and drawing only 6 feet water, was built for the transport of wares up the Yenissei from Kureika. It was never intended to go to sea, and "never," Prof. Nordenskjöld says, "so wretched a boat dared to enter the waters of the Arctic Ocean." Nevertheless Capt. Swansenberg, with a crew of four men, safely crossed on board this boat the Kara Sea, and reached the Russian capital after a hundred days' cruise. With a compass almost useless because of the deviation occasioned by the iron on board, and struggling with ice, he reached, on August 30, the Kara strait, where he experienced a heavy gale. On September 11 he was at Vardö. Thence, after a fortnight's stay, the *Morning Dawn* went in tow of a Norwegian steamer to Christiania, and further, in the same manner, to Göteborg, which was reached on November 3, and to Helsingfors, and finally to St. Petersburg. The reception the gallant crew met with in the Norwegian towns was everywhere the most enthusiastic.

AT the last meeting, December 7, of the Russian Geographical Society, Col. Tillo read a report on the magnetical measurements made by M. Smirnoff in Russia. These measurements, accomplished with the utmost accuracy, embrace no less than 548 places, the declinations and inclinations having been measured at 287 places, and the former alone at 261. At the same meeting the Society resolved to enter into relations with different governments in reference to the establishment of polar meteorological stations, and to submit an elaborate scheme in connection with that subject to the next International Meteorological Congress.

GERMANY is still waging war against the illegal use of the doctor's title. A "Dr." Harmuth in Berlin who received his diploma from Philadelphia, was lately sentenced to pay 300 marks for using the prefix publicly.

M. POLYAKOFF, who was sent by the St. Petersburg Academy of Sciences for the exploration of the mammoth remains in the Government of Tomsk, has now returned to St. Petersburg after having made a journey in the Western Altai, the Kirghiz Steppe, and in the Seven Rivers' Province, where he visited the lakes Alakul and Balkash. He brings back very rich collections of animals and plants, and the results of his varied observations will appear in the *Memoirs* of the Academy.

THE scheme for telegraphing without wires, the *New York Tribune* states, by means of aerial currents of electricity, has been revived by Prof. Loomis. He has met with success in using kites for this purpose, a copper wire being substituted for the usual kite string. Signals were transmitted thus between kites ten miles apart. His new experiments are made in the mountainous regions of West Virginia, between lofty peaks. Continuous aerial currents are found at these altitudes, which will serve the purposes of the telegraph, except when rarely interrupted by violent disturbances of the atmosphere. A scheme is now on foot to test the merits of aerial telegraphy in the Alps.

THE *Journal of Forestry*, which started in the month of May last, in the interest of forest conservancy and management generally, maintains the reputation which the early numbers indicated. In recent numbers, Prof. Boulger, F.L.S., has contributed some papers, which are being continued, on "Cultural First Principles," in which he considers (1) "climate," (2) the "nature of the soil," and (3) "theoretical considerations (as to the treatment of the soil." In this latter portion of the subject drainage forms of course no inconsiderable part. Sloping plantations, it is shown, will seldom require artificial drainage,

for such a situation on high soils is quite suited for conifers, and if on heavy soils sufficient for oak and other hard-wooded trees. Mr. Boulger points out, what ought to be apparent to all, that the growth of rushes, the wood rush (*Lucula*), the bog asphodel (*Narthecium*), a yellow star-like plant, the tufted hair-grass (*Aira cespitosa*), or of mosses on the surface, are sure indications of the absolute necessity of drainage. Though these are facts with which a practical forester is well acquainted, it is nevertheless necessary to impress them upon the minds of all interested in forest produce. Some useful hints as to the preservation of timber for fencing, or in damp underground situations, are given in the number of the *Journal* for the current month.

R. PICTET describes some interesting experiments (*Arch. Sc. Phys.*, lix.) made for the purpose of determining the conditions under which transparent or non-transparent ice is formed. It was ascertained that water frozen in a vessel dipped in a cold glycerine solution formed perfectly transparent ice as long as the temperature ranged between  $0^{\circ}$  and  $-1.5^{\circ}$ . If the solution was cooled below  $-3^{\circ}$ , the ice was whitish and of a less specific gravity, these properties being intensified with the lowering of the temperature. No difference in the melting-point or amount of warmth required for melting was observable among the various varieties of ice. The opacity of ice results from an irregular arrangement of the ice-crystals, as well as from the presence of small bubbles of air—less than  $\frac{1}{2}$  mm. in diameter—which are mechanically inclosed. They can be removed by slowly conducting through freezing water large bubbles of air which carry with them the small bubbles.

At a public meeting held in the Cheltenham Masonic Hall on December 15, Sir F. Abbott in the chair, it was resolved to institute a "Cheltenham Philosophic Society," which should hold its meetings during the winter months. Upwards of fifty gentlemen signified their desire to become members, and a committee was formed to draw up rules to be submitted at a future date to a general meeting for their sanction.

DR. JOHN RAE asks us to state that in his paper on Eskimo skulls read at the Anthropological Institute on May 8 last, and published in the newly-issued number of the *Journal* of the Institute, he by mistake called the Western Eskimo Brachycephalic, whereas they are Mesocephalic.

IN the letter on the meteor last week, p. 124, " $8 (\pm 2) \times \text{Lyræ}$ ," should be  $8 (\pm 2)$  times Lyræ.

THE additions to the Zoological Society's Gardens during the past week include a pair of Musk Deer (*Moschus moschiferus*), from Central Asia, presented by Sir Richard Pollock; a pair of Axis Deer (*Cervus axis*), from India, presented by Dr. Carl Siemens; a Diana Monkey (*Cercopithecus diana*), from West Africa, presented by Mr. P. Spink; a Bonnet Monkey (*Macacus radiatus*), from India, presented by Mr. T. H. Evans; a Patas Monkey (*Cercopithecus ruber*), from West Africa, a Red-backed Saki (*Pithecia chiropotes*), a Red-faced Spider Monkey (*Ateles paniscus*), two Kinkajous (*Cercoleptes caudivolvulus*), a Coati (*Nasua nasica*), an Azara's Fox (*Canis azarae*), a Black Vulture (*Cathartes atratus*), from South America, deposited two Schlegel's Doves (*Chalcophaps indica*), from West Africa, two Lesser Razor-billed Curassows (*Mitua tormentosa*), from South America; two Waxwings (*Ampelis garrulus*), four Bullfinches (*Pyrrhula rubicilla*), European, purchased; four Common Waxbills (*Estrela cinerea*), two Cinnamon Waxbills (*Estrela carulescens*), six Orange-cheeked Waxbills (*Estrela melpoda*), two African Silver Bills (*Munia cantans*) seven Yellow-rumped Seed Eaters (*Crithagra chrysopyga*), from West Africa, received in exchange; a Chinchilla (*Chinchilla lanigera*), born in the Gardens.

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The Syndicate, appointed in May, 1875, to consider the requirements of the university in different departments of study, have just issued their fourth report on the subject. After stating that in their opinion the inter-collegiate system should be further stimulated and supplemented by the institution of university readerships, and that by a more complete organisation the requisite provision for teaching and the encouragement of research might be to a considerable extent made, they nevertheless are of opinion that certain subjects of great importance are not now represented in the professoriate, the absence of which from such representation constitutes a serious defect in the Cambridge system, and they recommend that professorships amongst other subjects should be created as soon as the resources of the university permit, in comparative philology, mental philosophy and logic, physiology, English language and literature.

The Syndicate, with regard to existing professorships, suggest that the Professorship of Mineralogy should be for the future a Professorship of Mineralogy and Mineral Chemistry.

There are other subjects of scarcely less importance of which there ought always to be recognised teachers in the University, although the Syndicate are not prepared to say that the teacher ought always to have the status of a professor. Such are analytical chemistry, morphological and physiological botany (as distinguished from systematic botany), comparative anatomy (as distinguished from zoology), pathological anatomy.

In other subjects, again, it is desirable that the University, without establishing permanent offices, should have the means of appointing professors or other teachers from time to time when there is the opportunity of securing the services of a specially competent person. Such are the theory and history of education, as also some special departments of natural science.

The following is the Natural Science Tripos' list for this year:—Class I.—(2) Ds. Bower, Trinity; (4) Cullen, Christ's; (1) Fenton, Christ's; (1) Greaves, Christ's; (2 and 3) Hill, Downing; (1) Ohm, Emmanuel; (3) Sedgwick, Trinity. Class II.—Ds. Harrison, Christ's; Holthouse, Trinity; Houghton, St. John's; Merton, St. John's; North, Sidney; Taylor, E. F. Vinter, Sidney. Class III.—Ds. Allen, St. John's; Buckmaster, Downing; Foster, Trinity; Wallis, St. John's; Weldon, Caius. The numbers indicate the subjects for knowledge of which the candidates are placed in the first class as follows:—1. Physics, chemistry, and mineralogy. 2. Botany. 3. Zoology and comparative anatomy, human anatomy, and physiology. 4. Geology.

EDINBURGH.—The second meeting of the session of the Edinburgh University Chemical Society, was held on the 12th instant, John Gibson, Ph.D., F.R.S.E., vice-president, in the chair. J. S. Thomson communicated a paper on solutions of litmus, in which he explained the preservation of the colour of such solutions on exposure to the air by the action of the air preventing fermentation. He also read a paper on the Determination of Melting Points.

TECHNICAL UNIVERSITY.—It may be remembered that a Committee of the City Companies has been for some time at work elaborating a scheme for founding a technical university in London. The last step taken by the Committee was to procure reports and suggestions from six specially nominated referees, viz., Prof. Huxley, Col. Donnelly (of the Science and Art Department), Capt. Douglas Galton, Mr. H. T. Wood (Assistant-Secretary of the Society of Arts), and Mr. Bartley (of the Science and Art Department). After having decided on these names, the Committee adjourned to allow time for the preparation of the reports. On Thursday last week they met again, and the reports were laid before them. After some discussion the further consideration of the subject was adjourned till January 17.

TAUNTON COLLEGE SCHOOL.—The Science Scholarship at Keble College, Oxford, is awarded to Mr. R. G. Durrant, of the Taunton College School. This is the fourth brilliant success that the school has gained in the last five months, and it is probably the last. The able science master, Mr. Shenstone, leaves at Christmas to take a Science Mastership at the revived Exeter Grammar School. He will not be replaced at Taunton, and the science teaching, which, after years of toil against obstacles, is just beginning to bear fruit, will become a thing of the past.